this building was contributed by: IBUS, Germany

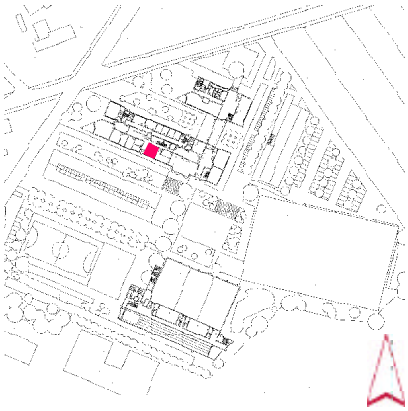
Oberstufenzentrum Wirtschaft

Zehdenick, Germany
52,5°N, 13,3°E
predominantly cloudy

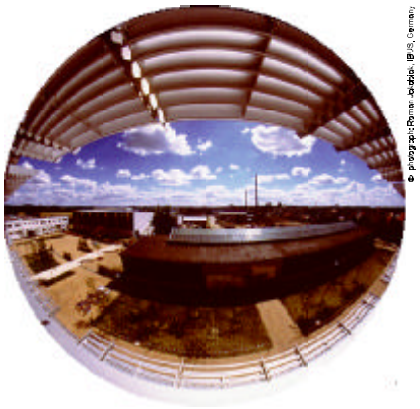
bilateral daylighting strategy with atrium

building

Zehdenick is situated about 50 km north of Berlin. The existing vocational college has been retrofitted and extended. The complex is composed of an existing school building and a new addition, creating a linear gap between them that forms an atrium. Covered with a glass roof it houses stairs and galleries.



Rural environment of the secondary school in Zehdenick, Landkreis Oberhavel.



The fixed lamellas on the South facade shade high angle incident sunlight.

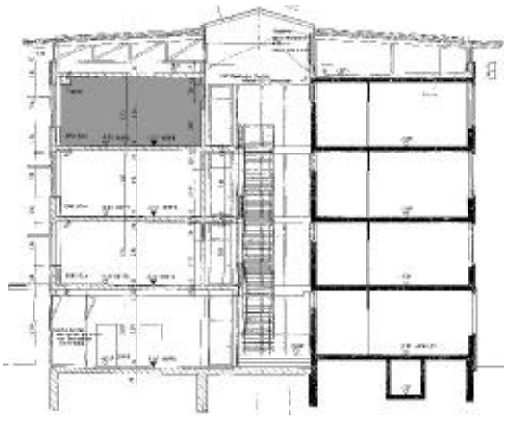
daylight strategy

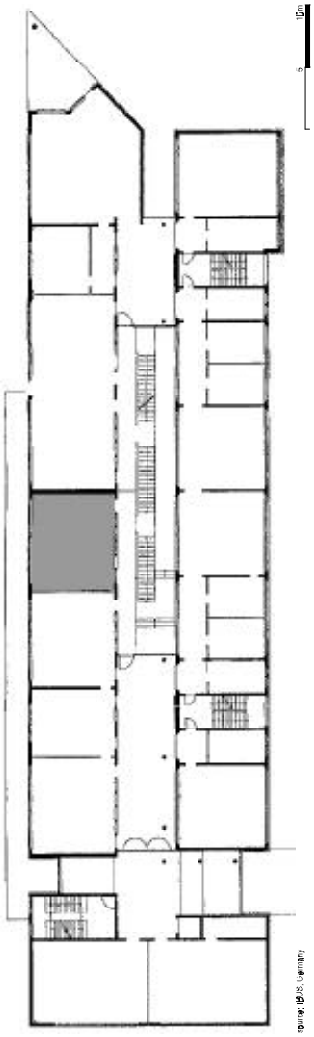
The use of daylight was part of an overall passive solar design strategy. The classrooms have a bilateral daylighting concept, with the main window facing South. It is functionally divided into an unobstructed upper part, and a lower part, that is shaded by an exterior overhang comprised of fixed, anodized aluminum louvers. An additional motorized blind on the inside protects from glare. It can be manually controlled by the teacher. The clerestory windows in the atrium wall are of clear glass but cannot be opened because of fire safety reasons. Fixed okasolar lamellas in the cavity of the glass of the atrium roof shade the atrium and hence protect windows of the classrooms facing the atrium from glare.

View from west, showing the sharp edged front of the new school-building on the right, the old part of the building is on the left side. The gap between them forms an atrium space.

classroom

The clerestories in the atrium wall visually connect the classrooms to the atrium. The overhang as well as the okasolar lamellas are fixed shading systems designed for thermal shading during summer. Combined with considerable thermal masses they efficiently protect from overheating without affecting the daylight performance during winter. The use of environmentally friendly materials is part of the design concept. The furniture is made of wood and linoleum is used as floor covering.

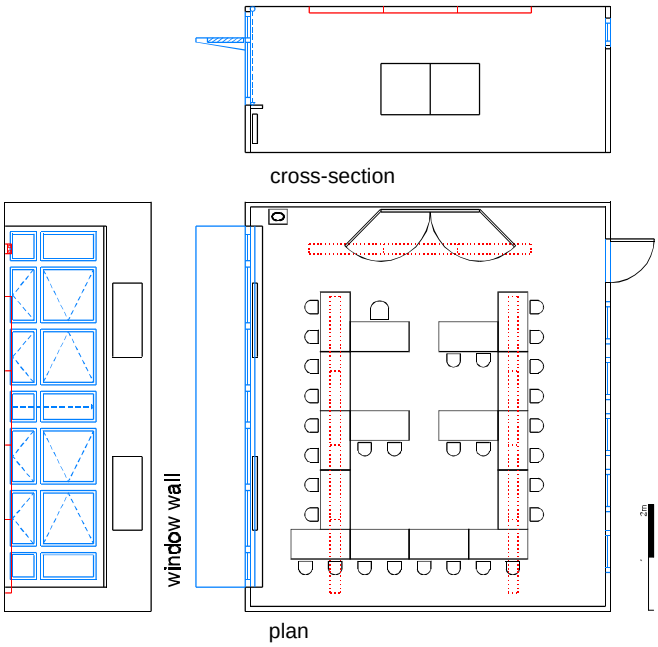




Cross-section: The old building is on the right, the new part of the school is shown on the left. Floorplan: Third story of the secondary school in Zehdenick.

Classroom in the vocational college of Zehdenick. The fixed exterior shade is designed to protect from high angle incident sunlight in summer. The movable interior blind protects from glare.

Detail of the exterior sunshade situated at the window transom.



building data

size	6 900 m²
number of stories	4
architect	IBUS
daylight consultant	IBUS
year of completion	1997

classroom

daylight strategy	bilateral, sidelighting
dimensions (depth/width/height)	7,1 m / 8,1 m / 3,0 m
room area	57,8 m²
floor	blue linoleum, 23%
wall	white paint, 85%
side wall to atrium	concrete, 52%
blackboard	green coating, 11%
ceiling	white paint, 85%
table	timber veneer, 23%
south facing window	double, low-E
north facing window	single clear glazing
atrium glazing	double, low-E, fixed lamellas in the cavity of the glass
lamp types	fluorescent lamps
installed power density	10 W/m²
control strategy	manual dimming and switching

facade		South-facade window	North facing interior window
data	orientation	205°	25°
	glazed area	11,3 m²	4,8 m²
	opening index	0,47	0,2
function	daylighting	◐	●
	view outside	◐	●
	ventilation	◐	-
	operable	◐	-
	shading	◐	-
	redirection	□	-

systems		sunshade	blind	none
function	sun shading	◐	●	
	glare protection	□	●	
	redirection	□	-	
location	inside	□	●	
	window pane	◧	-	
	outside	◐	-	
	movable	-	●	
	fixed	◐	-	